

**IN THE CLAIMS**

The following is a complete listing of the claims, which replaces all previous versions and listings of the claims.

1-15. (canceled)

16. (previously presented) A system, comprising:

a motor resistance processing module adapted to establish resistance data based on input data of the electric motor;

a motor estimation module adapted to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data and cable resistance data; and

a data storage and access module adapted to identify a motor test record according to at least one test identifier and to provide data from the motor test record to the motor estimation module.

17. (original) The system as recited in claim 16, wherein the motor resistance processing module comprises a temperature compensation module adapted to establish current resistance data based on current temperature data and baseline temperature and resistance data.

18. (original) The system as recited in claim 16, wherein the motor resistance processing module comprises a cable resistance calculation module adapted to establish cable resistance data based on a cable gauge, a number of cables per phase, a cable length, and a cable temperature.

19. (original) The system as recited in claim 16, wherein the motor estimation module is operable to establish an estimated value of an operational performance parameter of the electric motor based on the estimated values of electrical parameters of the electric motor.

20. (original) The system as recited in claim 16, comprising a visual display operable to provide a visual indication of at least one of the estimated values.

21. (original) The system as recited in claim 16, comprising a keyboard operable to facilitate manual entry of motor data.

22. (original) The system as recited in claim 16, comprising at least one database of motor data.

23. (original) The system as recited in claim 22, wherein the at least one database comprises a customer motor database having operational data of customer motors, motor applications, and performance data of the customer motors.

24. (original) The system as recited in claim 22, wherein the at least one database comprises a replacement motor database having operational data of alternative motors.

25. (original) The system as recited in claim 22, wherein the at least one database comprises a motor loss database having power losses correlated with various parameters of the electric motor.

26. (canceled)

27. (previously presented) The system as recited in claim 18, wherein the data storage and access module comprises a data population module adapted to populate fields of the motor estimation module with input current, input voltage, and output speed of the electric motor.

28. (previously presented) A system, comprising:

at least one database of motor data;

a data storage and access module adapted to identify data records in the at least one database; and

a motor estimation module adapted to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data and cable resistance data;

wherein the at least one database comprises a replacement motor database having operational data of alternative motors.

29. (original) The system as recited in claim 28, wherein the motor estimation module is operable to establish an estimated value of an operational performance parameter of the electric motor based on the estimated values of electrical parameters of the electric motor.

30. (original) The system as recited in claim 28, comprising a visual display operable to provide a visual indication of at least one of the estimated values.

31. (original) The system as recited in claim 28, comprising a keyboard operable to facilitate manual entry of motor data.

32. (original) The system as recited in claim 28, wherein the at least one database comprises a customer motor database having operational data of customer motors, motor applications, and performance data of the customer motors.

33. (canceled)

34. (original) The system as recited in claim 28, wherein the at least one database comprises a motor loss database having power losses correlated with various parameters of the electric motor.

35. (original) The system as recited in claim 34, wherein the power losses comprise friction and windage losses correlated with various parameters of the electric motor.

36. (original) The system as recited in claim 28, wherein the data storage and access module comprises a data logging module adapted to record the electrical input data into the data records for a desired test of the electric motor.

37. (original) The system as recited in claim 28, wherein the data storage and access module comprises a data identification module adapted to identify a log of a desired test of the electric motor based on at least one test identifier.

38. (original) The system as recited in claim 28, wherein the data storage and access module comprises a data population module adapted to populate fields of the motor estimation module with logged data for a desired test of the electric motor.

39. (original) The system as recited in claim 38, wherein the logged data comprises the electrical input data and at least one operational parameter of the electric motor.

40. (original) The system as recited in claim 39, wherein the electrical input data comprises input current, input voltage, and frequency of the electric motor.

41. (original) The system as recited in claim 39, wherein the at least one operational parameter comprises an output speed of the electric motor.

42-55. (canceled)

56. (previously presented) A method of operating a motor having a rotor and a stator, comprising:

accessing at least one motor database;

providing the instrumentation system with electrical input data obtained during testing of the motor; and

operating the instrumentation system to establish estimated values of a plurality of electrical parameters of the motor based at least partially on the motor database and the electrical input data;

wherein accessing comprises retrieving previous testing data for the motor.

57. (previously presented) The method as recited in claim 56, wherein accessing comprises retrieving friction and windage loss data for the motor.

58. (canceled)

59. (previously presented) The method as recited in claim 56, wherein retrieving previous testing data comprises obtaining the electrical input data and at least one operational parameter of the motor.

60. (original) The method as recited in claim 56, wherein accessing comprises retrieving customer motor data logged for a particular customer.

61. (original) The method as recited in claim 56, further comprising operating the instrumentation system to estimate at least one motor operating parameter based on the estimated values, the motor database, and the electrical input data.

62-66. (canceled)

67. (previously presented) A system, comprising:

at least one database of motor data, wherein the at least one database comprises a customer motor database having operational data of customer motors, motor applications, and performance data of the customer motors;

a data storage and access module adapted to identify data records in the at least one database; and

a motor estimation module adapted to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data and cable resistance data.

68. (previously presented) A system, comprising:

at least one database of motor data;

a data storage and access module adapted to identify data records in the at least one database; and

a motor estimation module adapted to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data and cable resistance data;

wherein the at least one database comprises a motor loss database having power losses correlated with various parameters of the electric motor.

69. (previously presented) A system, comprising:

at least one database of motor data;

a data storage and access module adapted to identify data records in the at least one database; and

a motor estimation module adapted to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data and cable resistance data;

wherein the data storage and access module comprises a data population module adapted to populate fields of the motor estimation module with logged data for a desired test of the electric motor.